

C l a i m s

1. An opening-force-maximizing device of an underpressure-activated valve for a drinking container (2) having an outlet opening (4), the container (2) being pressure
5 balanced against an ambient pressure (P1) when in position of use, in which position the device is connected to the container (2) and includes a partition wall (6, 106, 206) covering and pressure-sealingly enclosing the outlet opening (4) and being provided with
10 a wall opening (8, 108, 208), the upstream side of which is in pressure-sealing contact with an axially movable valve sealing member (22, 122, 222) being in position of rest, and the device also including a peripherally continuous membrane (12, 112, 212) being pressure-
15 balanced against the ambient pressure (P1) and being arranged to the container (2) and about a valve axis (14) onto the partition wall (6, 106, 206) and through the wall opening (8, 108, 208), and the membrane (12, 112, 212) having an axial extent, thereby forming a sleeve-
20 like body, whereby the membrane (12, 112, 212) consists of an attachment end (12a, 112a, 212a) fixedly connected to the partition wall (6, 106, 206), and a movable manoeuvring end (12b, 112b, 212b) placed at an axial distance from the attachment end (12a, 112a, 212a), and
25 the manoeuvring end (12b, 112b, 212b) being arranged in a tensile-force-transmitting manner to said axially movable sealing member (22, 122, 222), c h a r a c t e r i z e d
i n that the sleeve-like membrane (12, 112, 212) is arranged with a maximum longitudinal extent when at rest
30 in its inactive position, and that the membrane (12, 112, 212) is radially flexible and deflectable and also is arranged in a manner inhibiting axial stretching, whereby

the membrane (12, 112, 212) is insignificantly extendable axially in its longitudinal extent when subjected to tensile loads caused by a differential pressure force acting on the membrane (12, 112, 212).

- 5 2. The device according to claim 1, characterized in that the manoeuvring end (12b, 112b, 212b) is connected to the sealing member (22, 122, 222).
3. The device according to claim 1, characterized in that an extension of the manoeuvring end
10 (12b, 112b, 212b) is formed as the sealing member (22, 122, 222).
4. The device according to claim 1, characterized in that the membrane (12, 112, 212) is of a cylindrical shape.
- 15 5. The device according to claim 1, characterized in that the membrane (12, 112) is of a conical shape.
6. The device according to claim 1, characterized in that the membrane (212) is of a partly
20 cylindrical and partly conical shape.
7. The device according to any one of claims 1-6, characterized in that the membrane (12) is radially deflectable outwards from the valve axis (14).
8. The device according to claim 7, characterized in that a mid portion of the membrane (12) is
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shaped as a longitudinal bellows having axially extending folds (36).

9. The device according to any one of claims 1-6, c h a -
r a c t e r i z e d i n that the membrane (112, 212) is
5 radially deflectable inwards towards the valve axis (14).
10. The device according to claim 9, c h a r a c t e r i -
z e d i n that the membrane (212) is provided with one
or more bracing rings (264) spaced apart between the
attachment end (212a) and the manoeuvring end (212b) of
10 the membrane (212), whereby the membrane (212) assumes a
desired deflection profile upon activation.
11. The device according to claim 9 or 10, c h a r a c -
t e r i z e d i n that the membrane (112, 212) is
arranged with one or more buckle locators that localize
15 desired deflection regions of the membrane (112, 212),
whereby the membrane (112, 212) assumes a desired
deflection profile upon activation.
12. The device according to any one of the preceding claims,
c h a r a c t e r i z e d i n that the membrane (12,
20 112, 212) is braced axially for it to yield a certain
resistance to radial deflection, whereby the membrane
(12, 112, 212) exerts a firm closing force on the sealing
member (22, 122, 222) when the membrane (12, 112, 212) is
at rest in its inactive position.
- 25 13. The device according to claim 12, c h a r a c t e r i -
z e d i n that the membrane (12, 112, 212) is provided
with one or more axial braces.

14. The device according to claim 12, characterized in that the membrane (12, 112, 212), when viewed in cross-section, is arranged into a hexagonal shape, star shape or wave shape, which has an axially bracing effect.

15. The device according to any one of the preceding claims, characterized in that the membrane (12, 112, 212) is formed asymmetrically about the valve axis (14).

10 16. The device according to claim 1, characterized in that the sealing member (22, 122, 222) is connected to a separate spring element urging the sealing member (22, 122, 222) pressure-sealingly towards said opening (8, 108, 208) in the partition wall (6, 106, 206) when the membrane (12, 112, 212) is in its position of rest.

17. The device according to claim 1, characterized in that the sealing member (22, 122, 222) and an edge of the wall opening (8, 108, 208) are connected via a breakable seal that is broken upon first-time movement of the sealing member (22, 122, 222).